DOCUMENT RESUME

ED 260 098 TM 850 418

AUTHOR Sofer, Sheldon; And Others
TITLE Peer Teachers as Mirrors and Monitors: Second Year Evaluation Report.
INSTITUTION Detroit Public Schools, Mich.
SPONS AGENCY National Inst. of Education (ED), Washington, DC.
PUB DATE Feb 85
CONTRACT 400-81-0037
NOTE 26p.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Achievement Gains; Classroom Observation Techniques; Elementary Education; Elementary School Mathematics; Grade 1; Grade 2; Grade 3; Grade 4; Improvement Programs; *Inservice Teacher Education; *Mathematics Achievement; *Peer Evaluation; *Program Effectiveness; Program Evaluation; Program Implementation; *Reading Achievement; Reading Instruction; Teacher Attendance; Teacher Student Relationship; Time Management; *Time on Task
IDENTIFIERS California Achievement Tests; Detroit Public Schools MI; *Peer Teachers as Mirrors and Monitors Project; Project Follow Through

ABSTRACT

Results are presented from the first two years of implementation of Detroit's Peer Teachers as Mirrors and Monitors Project. The data describe reading and mathematics achievement in grades 1-4 at two schools which participated in the project interventions, and one comparison school. Results indicate that: (1) teachers' appropriate use of time significantly increased; (2) teachers' attendance improved at School One and declined at School Two and the comparison site; (3) attendance for the second year was nearly equal at the two project schools, while the number of days absent at the comparison school almost doubled; (4) student on-task behavior remained almost stable over both years, and was higher at School One; (5) student attendance declined slightly at all three schools during the second year; (6) in both reading and mathematics achievement, School One outperformed School Two, which outperformed the comparison school; and (7) the correlation between academic achievement and time on task was reaffirmed during both years. Suggested explanations of the results are included, as well as equivalent national percentile ranks, a description of the curriculum, and criteria for schools' eligibility. (GDC)

DETROIT PUBLIC SCHOOLS

PEER TEACHERS AS MIRRORS AND MONITORS PROJECT

SECOND YEAR EVALUATION REPORT

FEBRUARY, 1985

SHELDON SOFER
PRINCIPAL INVESTIGATOR

BARBARA WHITESIDE
PROJECT ADMINISTRATOR

JOANNE MOORE
PROJECT EVALUATOR

RESEARCH REPORTED HERE WAS SUPPORTED BY THE NATIONAL INSTITUTE OF EDUCATION, U.S. DEPARTMENT OF EDUCATION, UNDER NIE CONTRACT #400-81-0037. THE OPINIONS EXPRESSED DO NOT NECESSARILY REFLECT THE POSITION, POLICY, OR ENDORSEMENT OF THE NATIONAL INSTITUTE OF EDUCATION.

PEER TEACHERS AS MIRRORS AND MONITORS

SECOND YEAR EVALUATION REPORT

Introduction

The purpose of this report is to provide the reader with data-based information on the results of the first two years of implementation of Detroit's "Peer Teachers as Mirrors and Monitors" NIE Follow-Through Project. The project seeks to increase the mathematics and reading achievement of students in grades 1-4 by increasing the amount of time students are engaged in learning tasks in which they experience a low error rate and are directly related to outcome measures.

The strategy for accomplishing this purpose includes a periodic system of feedback to teachers of data collected by their peers documenting students' engaged-in-learning rates and their own use of classroom time (Mirrors and Monitors), along with four types of teacher training: Knowledge of Theory and Practice, Modeling/Demonstration/Sharing, Practice in Simulated Conditions, and Coaching/Recycling. Each of these four interventions is progressively more expensive and intensive. Project teachers use the results of the Mirrors and Monitors data to determine areas in need of strengthening via the interventions. Each intervention is approximately four weeks in length followed by a Mirrors and Monitors session.

Three schools were involved in the first two years of project implementation: two participated in the project interventions and one served as a control site. The control school was chosen based upon its similarity to the project schools and its willingness to participate in the data collection process in the fall and spring of each year. Several of the teachers at the control site were unwilling to permit observers in their classrooms during the spring of the second year, resulting in limited data for the comparison site for this period.

Many problems were encountered during the first year of implementation. These included, but were not limited to, a month-long teachers' strike at the beginning of the school year, and resistance on the part of the teachers at the participating schools to embrace the project. Feelings and attitudes of participants are documented in the Oral Historian's reports. As a result of these problems, the first year of the project involved only the Mirrors and Monitors phase of the project along with an increase in the level of awareness of the project goals and objectives on the part of the staff at the two participating schools. The materials for the Knowledge of Theory and Practice were placed in the schools which were participating in the project, but none of the teachers used or read any of the materials. None of the other interventions were begun. The participating teachers completed only two sets of observations in their peers' classrooms and these were undertaken near the end of the school year. They did not use the project-developed data collection forms but observed behaviors that they identified among themselves.

Year two of project implementation saw fewer problems. The school year began on time and initial data collection took place as scheduled. The Knowledge Theory and Practice intervention was modified to provide teachers with substitute service so that they could use the materials during school time. All project teachers participated in the first intervention. Peer observations were conducted following this intervention, also using substitute service.

Sixteen teachers elected to participate in the Modeling/Demonstration/Sharing intervention (nine at School One and seven at School Two). Teachers used demonstration teachers to learn new teaching strategies during this intervention. Mirrors and Monitors followed this intervention at both schools.

Only one project teacher requested to participate in the Practice in Simulated Conditions intervention. Since the intervention required teachers to work in groups, it was not possible to implement this intervention.

One teacher (from School One) participated in the Coaching/Recycling intervention. The coaching involved this teacher and the Area demonstration teacher working together one-to-one.

In May and June of 1984, project staff and graduate student coders administered the CAT to students in grades 1, 2, and 4 (since the district no longer administers the CAT at these grades as part of the city-wide testing program) and collected the post-observation data at the three schools. Several teachers at the comparison school refused to allow data collectors to observe their classes during the post data collection period. This resulted in fewer students and teachers on whom data were available at the comparison school.

Data contained in this report focus on three major areas: classroom/teacher behaviors, student behaviors, and achievement. A brief description of the methodology and instrumentation will be presented for each of these areas before data are presented. A more detailed description of the instrumentation and methodology may be found in the August, 1982, Baseline Data Report submitted to NIE. The Final Plan, submitted to NIE in March, 1982, contains detailed descriptions of the interventions and lists of materials used by the project.

Teacher/Classroom Results

Classroom level data for year two were collected using a modification of the Detroit developed coding form (see the Appendix). The new version of the form lists 11 activities in which teachers and/or students may be engaged. These 11 activities resulted from combining and renaming several of the original 18 categories used to collect data during year one. The activities are divided into the same four categories for both years: (1) non-interactive instruction, (2) interactive instruction, (3) off-task (student related), and

(4) organization. When activities were combined or renamed, they remained in the same category. Since data are reported by category, year one and year two da are comparable.

Each of the four categories of activity has a target percent of instructional time which research has shown to result in high on-task behavior and learning for students. Graduate student coders observed the situation in the classroom every two minutes and recorded what they saw on the form, indicating the number of students involved in each activity and marking a circle in the space corresponding to the teacher's behavior. Each coding gives a picture of what activities were taking place in the classroom during the two-minute interval in which the observation was made. The form provides space for 25 observations and instructions for summarizing the data and producing a profile of the activities which took place during the observed class period. The target percents for each of the four categories and the definitions of each of the activities appear on the form.

Each teacher was scheduled for four observations (two in math and two in reading) in the fall and spring of the project year. The mean percent of time across the four observations was recorded for each teacher as a pre- and posttest measure of their use of class time. Teachers who taught only reading or only math were observed only twice during each period. Due to some scheduling problems, some teachers were not observed the allotted number of times for each set of observations. When this occurred, the mean was computed based upon the actual number of observations made in the teacher's classroom.

Table 1 gives the numbers of teachers at each grade level and each school for whom observation data were available.

TABLE 1

Numbers of Teachers at Each School by Grade

Grade 1983-84	Numbers Of Teachers		
	Project Schools		Control
	School One	School Two	School
1	2	2	1
1/2 Split	1	0	0
2	3	2	1
2/3 Split	1	1	1
3	2	0	1
3/4 Split	1	1	0
4	1	2	2
Totals	11	8	6

Data for year one were based upon 12 teachers from School One, five teachers from School Two and seven teachers from the Control School. The kindergarten teachers were not included in the project during year two.

Table 2 presents the mean percents of time the teachers at each of the schools used in each of the four categories measured during the classroom observations. Data for fall '82 and spring '83 (year one) and fall '83 and spring '84 (year two) are included.

TABLE 2

Means of Percents* of Classroom Time Used in Four Categories

School	Observation Date	N	Non-Interactive Instruction	Interactive Instruction	Off-Task (Student Related)	Organization
School One	Fall - '82	11	12%	75%	1%	12%
	Spring - '83	12	8	84	1	8
	Fall - '83	11	4	86	1	9
	Spring - '84	11	4	83	5	8
School Two	Fall - '82	5	11	71	3	15
	Spring - '83	5	6	84	2	8
	Fall - '83	8	3	83	2	11
	Spring - '84	8	1	85	3	10
Control School	Fall - '82	7	19	60	5	15
	Spring - '83	7	12	76	2	10
	Fall - '83	6	8	68	7	14
	Spring - '84	6	7	79	3	11

*Percents may not total 100% due to rounding error.

Target percents for each of the categories were as follows:

Non-Interactive Instruction .. 35% or less
Interactive Instruction .. 50% or more
Off-Task (Student Related) .. 5% or less
Organization .. 15% or less.

Examination of the results presented in Table 2 indicates that over the first two years of the project both School One and School Two significantly increased the percent of time spent in interactive instruction. Both project schools maintained the increase in this category evidenced during year one. The Control School regressed eight percent at the Fall - '83 data collection

time in this category and then reached a new high (79 percent) at the Spring - '84 observation period. Teachers at all sites decreased the percent of time used in non-interactive instruction. The Organization category evidenced a slight increase at School Two, but remained below the Fall - '82 level and within the target. The Off-Task (Student Related) category remained near ten percent at the two project schools and slightly higher at the control school.

Attendance data were collected for teachers at all three schools. Table 3 displays the mean number of days absent for teachers at each grade level for year one and year two of project implementation. Examination of these data reveals mixed results. School One teachers improved their attendance during year two at the school level. Two teachers had more absences during year two than during year one but improvements by the other teachers resulted in a net improvement. School Two and the comparison school showed an opposite trend. None of the School Two teachers and only one of the comparison school teachers improved. Although School Two had more absences in year two than in year one, the comparison school's mean of 11.3 days absent was more than four days greater than the mean for either of the project schools during year two.

TABLE 3

Means of Numbers of Days Absent at Each School by Grade for Teachers Year One (1982-83) and Year Two (1983-84)

Grade 1983-84	Means of Numbers of Days Absent					
	School One		School Two		Control School	
	Year One	Year Two	Year One	Year Two	Year One	Year Two
1	10.0	5.8	2.0	3.0	9.0	7.0
1/2 Split			1.5	4.0		
2	8.8	5.8	1.8	8.0	8.0	10.0
2/3 Split	2.0	5.0	8.0	8.0	6.0	8.5
3			0.5	4.3	0.0	18.0
3/4 Split	12.5	16.0	5.0	10.0		
4	6.0	3.0	6.0	15.0	8.8	12.5
School Means	8.0	6.3	2.8	6.9	6.8	11.3

Student Time-On-Task Results

Student time-on-task data were collected using the same Detroit developed seating chart form used during year one. Prior to the observation by graduate student coders, a seating chart giving the name, ID number and location of each of the students in the class to be observed is prepared. In addition, name tags are provided for the students so that they can be identified by coders when the class is regrouped or students are moved during the coding period. Coders record an indicator of each student's on-task status every two minutes throughout the observation period. These observations take place at the same time as the teacher observation discussed in the previous section. The mean percent on-task behavior for each student is computed across all observations for the fall and spring codings.

Table 4 presents the numbers of students in each grade at each school for whom data were available. A total of 598 students was included in the analyses.

TABLE 4

Numbers of Students at Each School by Grade

Grade 1983-84	Numbers Of Students		
	Project Schools		Control
	School One	School Two	School
1	77	50	25
2	85	50	43
3	72	18	15
4	34	84	45
Totals	268	202	128

Table 5 presents data from both year one and year two, fall and spring, observations at the three schools. Data represent the mean percent on-task behavior for students at each grade level at each of the schools as well as an overall mean percent on-task behavior for the entire school.

Examination of the data in Table 5 reveals that School One and School Two (the project sites) maintained almost the same level of on-task student behavior at the spring observation. At School One, the fall observation for Year Two was elevated (92 percent) but dropped back to the year one spring level by the end of year two (85 percent). School Two showed a similar trend, with the fall, year two on-task percentage rising (to 86 percent) and then falling back in the spring of year two to within one percent of the spring, year one mean (75 percent and 76 percent, respectively). The Control School showed a similar rise from spring, year one (67 percent) to fall, year two (81 percent); however, the final observation found a larger proportion of students

on-task at the end of year two (74 percent) than at the end of year one (67 percent). An additional interesting observation in these data is that at the end of the second year, all three schools were within one percent of their overall on-task rate for students evidenced before the project began. In any case, School One's rate was ten percent above the other two schools.

TABLE 5

Mean Percent On-Task Behavior for Students at Each School by Grade Level Fall and Spring, Year One and Year Two

Grade	Project Year	Project Schools				Control School	
		School One		School Two			
		Fall	Spring	Fall	Spring	Fall	Spring
1	One	78%	80%	67%	74%	59%	58%
	Two	92	87	88	71	83	72
2	One	77	72	81	87	73	68
	Two	90	81	88	86	77	65
3	One	84	95	-	-	87	81
	Two	92	80	84	82	90	79
4	One	95	91	87	57	83	70
	Two	98	98	83	68	81	83
School Means	One	84	85	75	76	73	67
	Two	92	85	86	75	81	74

Means of numbers of days absent for students at each of the three schools by grade for year one and year two are displayed in Table 6. Only students for whom data were available both years are included in this analysis. No data were available for students in grade 1.

Examination of the data presented in Table 6 indicates that attendance declined slightly at each of the sites. The change at School One was the largest, amounting to an average increase of 1.1 days absent in year two over year one. At School Two, the average increase in days absent was 0.6 days. The Control School had the smallest increase, 0.4 days. In absolute terms, the Control School had the highest absence rate in year two (12.3 days), followed in descending order by School Two (11.6 days) and School One (11.4 days). This trend paralleled the comparison made in year one between the non-project year (1981-82) and year one (1982-83).

TABLE 6

Means of Numbers of Days Absent at Each School by Grade for Students Year One (1982-83) and Year Two (1983-84) (N=312)

Grade 1983-84	Means of Numbers of Days Absent					
	School One		School Two		Control School	
	Year One	Year Two	Year One	Year Two	Year One	Year Two
2	11.0	13.1	16.0	15.7	13.1	11.9
3	10.1	11.1	7.9	6.2	8.2	12.0
4	8.5	7.3	9.6	11.1	11.7	12.7
School Means	10.3	11.4	11.0	11.6	11.9	12.3

Achievement

Student achievement for this project was assessed using the California Achievement Test (CAT/C) which was administered to project students and students at the Control School (in grades 1-4) during the spring of each year. Achievement was assessed in two areas: reading (by means of the CAT/C Reading Comprehension subtest) and mathematics (by means of the Mathematics Computation and Concepts and Applications subtests, combined into the single Mathematics total score). Scores on each of these subtests were recorded in scale score units in order to allow for statistical analyses which require interval data. Students with complete data were included in each analysis in order to allow for meaningful pretest/posttest comparisons.

Table 7 displays the mean scale scores on the reading comprehension subtest for each school by grade level for the spring, 1983 (pretest) assessment. Parallel information for the spring, 1984 (posttest) assessment are displayed in Table 8. Only students with reading data for both testing periods were included in these analyses. Equivalent National percentile ranks for year one and year two at each grade level for each school are included in the Appendix in order to facilitate interpretation of scores.

Analysis of covariance was employed to compare the three schools' scores in reading on the posttest controlling for pretest differences. The results of this analysis appear in Table 9. Students with complete reading data were included in this analysis. Table 10 presents the school posttest mean scores in reading adjusted for pretest scores.

TABLE 7

Means of Scale Scores on the CAT/C Reading Comprehension Subtest
For Each School by Grade
Spring, 1983 (Year Two Pretest)

Grade 1983-84	Project Schools						Control School		
	School One			School Two					
	Mean	s.d.	N	Mean	s.d.	N	Mean	s.d.	N
1	386	22	2*						
2	374	31	61	316	29	21	350	31	28
3	398	34	35	390	34	17	363	56	8
4	470	38	25	421	36	16	416	33	32
School Means	401	49	123	370	56	54	382	47	68

*These two students were grade failures and are in Grade 1 for the posttest also.

TABLE 8

Means of Scale Scores on the CAT/C Reading Comprehension Subtest
For Each School by Grade
Spring, 1984 (Year Two Posttest)

Grade 1983-84	Project Schools						Control School		
	School One			School Two					
	Mean	s.d.	N	Mean	s.d.	N	Mean	s.d.	N
1	342	83	2*						
2	394	31	61	359	32	21	380	44	28
3	418	39	35	421	33	17	400	39	8
4	539	43	25	445	59	16	427	45	32
School Means	429	68	123	404	56	54	405	49	68

*These two students were grade failures and are in Grade 1 for the pretest also.

TABLE 9

Results of ANCOVA Comparing Posttest Reading Scale Scores for Three Schools While Controlling for Pretest Reading Scale Scores
Year Two Data

Source	Sum of Squares	df	Mean Square	F	Significance
Pretest	510669.000	1	510669.000	408.787	**
Main Effects	48315.250	5	9663.047	7.735	**
School	18355.500	2	9177.750	7.347	**
Grade	44334.125	3	14778.039	11.830	**
Interaction	67728.313	4	16932.078	13.554	**
Explained	626712.563	10	62671.254	50.168	**
Residual	292319.438	234	1249.228		
Total	919032.000	244	3766.524		

**p < .01

The overall ANCOVA produced a significant F value of 50.168. The covariate (reading pretest scores) accounted for a significant portion of this difference (F = 408.787). There was a significant interaction between the two main effects (F = 13.554), grade level and school. Both main effects were significant. The grade level effect (F = 11.830) was anticipated due to the nature of the scale scores. The school effect (F = 7.347) showed that School One scored significantly higher than School Two and that School Two scored higher than the Control School (see adjusted means in Table 10). This result contrasts year one results where the school differences were not significant.

TABLE 10

Mean Posttest Reading Scale Scores
Adjusted for Pretest by School
Year Two Data

School	Adjusted Mean Scale Score
School One	425.75
School Two	414.95
Control School	402.73

TABLE 11

Results of ANCOVA Comparing Posttest Reading Scale Scores for Three Schools While Controlling for Pretest Reading Scale Scores And Proportion of Time-On-Task for Students Year Two Data

Source	Sum of Squares	df	Mean Square	F	Significance
Covariates	523767.188	2	261883.563	211.643	**
Pretest	473529.938	1	473529.938	382.686	**
On-Task	13098.176	1	13098.176	10.585	**
Main Effects	47434.250	5	9486.848	7.667	**
School	13262.867	2	6631.434	5.359	**
Grade	44313.832	3	14771.277	11.937	**
Interaction	59519.938	4	14879.984	12.025	**
Explained	630721.375	11	57338.305	46.338	**
Residual	288310.625	233	123 .385		
Total	919032.000	244	3[illegible] .524		

**p < .01

Additional ANCOVA analyses were conducted controlling for pretest and the proportion of time students were on-task in the spring of year two. The results (see Table 11) indicated that the differences observed in the analyses above were maintained. The overall ANCOVA produced a significant F value of 46.338 ($p < .01$). The pretest and on-task covariates both accounted for a significant proportion of the variance ($F = 382.686$ [$p < .01$] and $F = 10.585$ [$p < .01$], respectively). The interaction and main effects (grade and school) were significant. The adjusted means indicated that School One scored highest, followed by School Two and that the Control School scored lowest (see Table 12).

TABLE 12

Mean Posttest Reading Scale Scores Adjusted For Pretest and Proportion Time-On-Task For Students Year Two Data

School	Adjusted Mean Scale Score
School One	423.98
School Two	416.97
Control School	404.28

TABLE 13

Means of Scale Scores on the CAT/C Mathematics Subtest
For Each School by Grade
Spring, 1983 (Year Two Pretest)

Grade 1983-84	Project Schools						Control School		
	School One			School Two					
	Mean	s.d.	N	Mean	s.d.	N	Mean	s.d.	N
1	316	4	2*						
2	340	22	61	313	19	21	323	22	28
3	366	14	35	363	19	17	369	14	8
4	440	29	25	382	31	13	398	27	32
School Means	368	44	123	347	37	51	364	42	68

*These two students were grade failures and are in Grade 1 for the posttest also.

TABLE 14

Means of Scale Scores on the CAT/C Mathematics Subtest
For Each School by Grade
Spring, 1984 (Year Two Posttest)

Grade 1983-84	Project Schools						Control School		
	School One			School Two					
	Mean	s.d.	N	Mean	s.d.	N	Mean	s.d.	N
1	300	40	2*						
2	355	20	61	345	21	21	347	24	28
3	404	27	35	400	27	17	382	20	8
4	543	34	25	407	49	13	422	31	32
School Means	406	77	123	379	43	51	386	45	68

*These two students were grade failures and are in Grade 1 for the pretest also.

Table 13 displays the mean scale scores for the CAT/C mathematics subtest for each school by grade level for the spring, 1983 (pretest) testing. Parallel information for the spring, 1984 (posttest) assessment are displayed in Table 14. Only students with mathematics data for both testing periods were included in these analyses. Equivalent National percentile ranks for year one and year two at each grade level for each school are included in the Appendix in order to facilitate interpretation of scores.

Analysis of covariance was employed to compare the three schools' scores in mathematics on the posttest controlling for pretest differences. The results of this analysis appear in Table 15. Students with complete mathematics data were included in this analysis. Table 16 presents the school posttest mean scores in mathematics adjusted for the pretest scores.

The overall ANCOVA produced a significant F value of 159.912. The covariate (mathematics pretest scores) accounted for a significant proportion of this difference (F = 1352.230). There was a significant interaction between the two main effects (F = 43.808), grade level and school. Both main effects were significant. The grade level effect (F = 17.631) was anticipated due to the nature of the scale scores. The school effect (F = 22.446) showed that School One scored significantly higher than School Two and that School Two scored higher than the Control School (see adjusted means in Table 16) This result parallels the year two reading results and reinforces the somewhat weaker finding from the year one data.

TABLE 15

Results of ANCOVA Comparing Posttest Mathematics Scale Scores for Three Schools While Controlling for Pretest Mathematics Scale Scores
Year Two Data

Source	Sum of Squares	df	Mean Square	F	Significance
Pretest	728065.875	1	728065.875	1352.230	**
Main Effects	38579.250	5	7715.848	14.331	**
School	24170.828	2	12085.414	22.446	**
Grade	28477.805	3	9492.602	17.631	**
Interaction	94349.125	4	23587.281	43.808	**
Explained	860994.250	10	86099.375	159.912	**
Residual	124374.750	231	538.419		
Total	985369.000	241	4088.668		

**$p < .01$

TABLE 16

Mean Posttest Mathematics Scale Scores
Adjusted for Pretest by School
Year Two Data

School	Adjusted Mean Scale Score
School One	404.62
School Two	392.64
Control School	386.43

TABLE 17

Results of ANCOVA Comparing Posttest Mathematics Scale Scores for Three Schools While Controlling for Pretest Mathematics Scale Scores Ane Proportion of Time-On-Task for Students
Year Two Data

Source	Sum of Squares	df	Mean Square	F	Significance
Covariates	748761.875	2	374380.938	722.075	**
Pretest	573963.625	1	573963.625	1107.014	**
On-Task	20695.996	1	20695.996	39.917	**
Main Effects	26271.938	5	5254.387	10.134	**
School	15250.590	2	7625.293	14.707	**
Grade	22215.941	3	7405.313	14.283	**
Interaction	91085.000	4	22771.250	43.919	**
Explained	866118.813	11	78738.063	151.864	**
Residual	119250.188	230	518.479		
Total	985369.000	241	4088.688		

**$p < .01$

Additional ANCOVA analyses were conducted controlling for pretest and the proportion of time students were on-task in the spring of year two. The results (see Table 17) indicated that the differences observed in the analyses above were maintained. The overall ANCOVA produced a significant F value of 151.864 ($p < .01$). The pretest and on-task covariates both accounted for a significant proportion of the variance ($F = 1107.014$ [$p < .01$] and $F = 39.917$ [$p < .01$], respectively). The interaction and main effects (grade and school)

were significant. The adjusted means indicated that School One scored highest, followed by School Two and that the Control School scored lowest (see Table 18).

TABLE 18

Mean Posttest Mathematics Scale Scores Adjusted For Pretest and Proportion Time-On-Task For Students Year Two Data

School	Adjusted Mean Scale Score
School One	403.63
School Two	389.19
Control School	383.07

Correlational Analyses

In order to reaffirm the relationship between achievement and on-task behavior, correlational analyses were performed on the data from year two which parallel the year one analyses. The proportion of on-task behaviors from the spring coding was used as a measure of on-task behaviors for students. This measure was correlated with the scale score in reading and mathematics for all project students.

The results indicated that there was a significant positive correlation between on-task behavior and reading achievement ($r = 0.2080$) and that there was also a significant positive correlation between on-task behavior and mathematics achievement ($r = 0.3234$). Similar results were obtained with year one data where the reading/on-task correlation was $r = 0.3466$ and the mathematics/on-task correlation was $r = 0.2619$.

Gain scores in scale score units were computed for students and these gain scores were then c related with the spring, 1984 proportion of on-task behavior for students. The mathematics gain score was significantly related to the on-task proportion ($r = 0.0810$, $p < .05$). The reading gain score was not significantly correlated with the on-task proportion ($r = 0.0246$). The year one data resulted in two nonsignificant correlations, $r = 0.0637$ and $r = 0.0933$ for reading gain and mathematics gain, respectively, with the proportion on on-task behavior for students.

Summary

This report has presented data-based information on the results of the first two years of implementation of Detroit's "Peer Teachers as Mirrors and Monitors" NIE Follow Through Project.

During the first year, significant increases in teachers' appropriate use of time were observed. These increases were maintained at School One and augmented at School Two during year two.

Teacher attendance improved at School One and declined at School Two and the Comparison School. The absolute level of attendance for year two was nearly equal at the two project schools while the mean number of days absent for teachers at the comparison school almost doubled.

Proportions of student on-task behavior over the two years of implementation have remained almost stable. This result is difficult to interpret in light of changes in teacher behavior and increased awareness on the part of project participants of methods for increasing time-on-task. It should be noted, however, that School One had consistently higher levels of on-task behavior than School Two and the Control School.

Student attendance declined slightly at all three schools during year two as compared with year one.

In the area of achievement, School One outperformed School Two which, in turn, outperformed the Control School in both reading and mathematics. These differences remained even when time-on-task and pretest differences were controlled using analysis of covariance.

Finally, the correlational relationship between achievement and time-on-task was reaffirmed in data from both years.

The differences observed in the data reported here confirm observations of the level of implementation and commitment to the project evidenced in anthropological data reported elsewhere. School One results indicate that where the project is most carefully and thoroughly implemented, evidence in the form of higher proportions of students on-task and higher achievement scores will result.

Conclusions

The unpredicted trend of engaged learning time during the two years of the project coupled with the improved achievement data are difficult to interpret.

In the two project schools and the control school, the engaged learning time increased from the spring, 1983 to the fall, 1983 and then decreased in the spring, 1984. The achievement test scores increased in all three schools from spring, 1983 to spring, 1984.

In an attempt to understand these changes, project staff met with teachers and principals of the two project schools. Although no sophisticated research answers were produced, several hunches emerged.

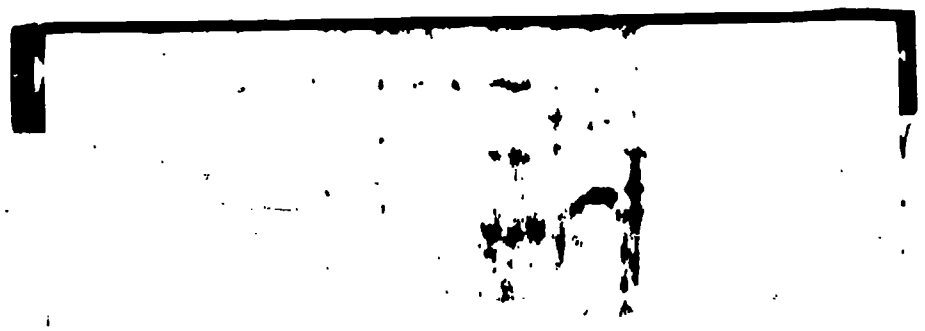
The highest rates of engaged learning time in the schools were in fall, 1983. One possible explanation is that the improvements were not significant. It is possible that once students are performing above 70 percent on-task, slight changes, either up or down, have little, if any, effect on academic achievement. If students are performing at or below 50 percent, it is likely that moving up to 70 percent would influence test scores. Since all three schools were well above 50 percent engagement rate on the initial observations, one hypothesis is that all four observations showed essentially the same engagement rates.

A competing hypothesis is that the improved engagement rates in fall, 1983 reflected the tighter classroom controls imposed by most teachers in the beginning of any school year. Teachers explained that they traditionally allow for less flexibility in their classrooms in the fall of the year since this is the time that the teachers are introducing the students to their instructional management procedures. By the spring, teachers are allowing the students a greater amount of independence. The teachers believe that while the students are equally on-task, they appear less so because of their greater movement in the classrooms.

The changes in achievement test scores do not seem to be solely attributable to changes in engaged learning time. During the 1983-84 school year (year two of the project), all Detroit Public Schools analyzed test results and began teaching toward skill deficit areas. The teachers, principals, and project staff believe that the improved test scores were largely the result of this increased emphasis on curriculum alignment.

The other change which may have affected the test scores was the allocation and use of instructional time by teachers. The proportion of time during which teachers were involved in interactive instruction increased and remained high. The proportion of time spent in organizational activities decreased and remained low. Stalling ("Allocated Academic Learning Time Revisited, or Beyond Time and Task," Educational Researcher, December, 1980) found that high levels of interactive instruction and decreasing the proportion of time spent on organizational activities were related to gains in reading achievement. This is the foundation upon which the project is based, and is consistent with our findings.

APPENDIX



PEER TEACHERS AS MIRRORS AND MONITORS
Observation Form Activities

ACITIVTY	DESCRIPTION
Silent Reading	Students are reading silently to themselves as a group activity or are working on individual assignments. No writing.
Seat Work	One or more students is/are writing papers, doing computation, or involved in any other silent written work related to the lesson.
Oral Reading	One or more students is/are reading a section from a play aloud or reading a book for the class or reading group to hear. Oral reading is usually not done in unison; generally students take turns reading sequential sections from a book. The teacher or the student(s) can also read aloud while the rest of the members of the class follow along in their own texts.
Instructional Explanation	An adult is informing some grouping of students about a subject. Academic discussion or slow-paced question/answer session takes place regarding lecture material, assignments, or problems.
Giving Directions	An adult is explaining an activity, the procedures to be followed, the amount of work to be finished, or rewards for completing the assignment. The discussion is not focusing on the academic content, but on the information that students need to carry out the assignment (or discussing grades).
Discuss/review Assignment	One or more students is/are receiving information or feedback on work they have completed or are being evaluated on their work preparatory to continuing the assignment.

ACTIVITY	DESCRIPTION
Practice/ Drill	One or more students are verbally involved in reinforcing, repetitive, or rote work. This activity must be differentiated from seat work. Students writing verbal material, as in dictation, are also coded practice/drill.
Students Off Task	One or more students or teacher and students are interacting about work or subjects other than class-related material or students are not involved in any activity or arriving or leaving or moving about the room. (See list of off task behaviors.)
Management	Taking attendance, making/receiving announcements, regrouping, forming lines, discipline, collecting money, etc.
Distribute/Collect Materials	Teacher and/or students are involved in passing out papers, putting away materials, preparing to leave, preparing or checking materials.
Transitions	Changing from one activity to another.

Figure 3B

DETROIT PUBLIC SCHOOLS

PEER TEACHERS AS MIRRORS AND MONITORS

Student Time-On-Task Observation Form

Teacher _____ Time ____:____ to ____:____

School _____ Grade:____ Subject _____

Room _____ Date _____ Topic_____

Observer _____

TABLE A-1

Equivalent National Percentile Ranks For CAT/C
Reading Comprehension Mean Scale Scores
By Grade For Each School
Year One

Year One Grade	National Percentile Ranks					
	School One		School Two		Control School	
	Pre	Post	Pre	Post	Pre	Post
2	69	57	34	52	69	48
3	48	55	-	-	45	41
4	47	56	36	53	64	70

TABLE A-2

Equivalent National Percentile Ranks For CAT/C
Reading Comprehension Mean Scale Scores
By Grade For Each School
Year Two

Year Two Grade	National Percentile Ranks					
	School One		School Two		Control School	
	Pre	Post	Pre	Post	Pre	Post
1	91	62	-	-	-	-
2	82	57	34	38	69	45
3	57	47	52	47	34	36
4	74	90	47	42	47	31

TABLE A-3

Equivalent National Percentile Ranks For CAT/C
Mathematics Total Mean Scale Scores
By Grade For Each School
Year One

Year One Grade	National Percentile Ranks					
	School One		School Two		Control School	
	Pre	Post	Pre	Post	Pre	Post
2	60	61	51	51	72	61
3	58	66	-	-	47	62
4	63	47	42	47	81	67

TABLE A-4

Equivalent National Percentile Ranks For CAT/C
Mathematics Total Mean Scale Scores
By Grade For Each School
Year Two

Year Two Grade	National Percentile Ranks					
	School One		School Two		Control School	
	Pre	Post	Pre	Post	Pre	Post
1	54	30	-	-	-	-
2	85	51	51	39	65	42
3	67	59	61	57	69	37
4	69	99	37	30	53	43

Nature of Present Curriculum and Educational Approach

The present curriculum of the two participating schools consists of language arts (reading, writing, literature, speech), mathematics, social science, science, physical education, and the fine arts (music and art).

The thrust of the district has been to improve academic achievement in both reading and mathematics. The Detroit Objective-Referenced Tests (DORT) is used as a management tool to insure that the learning objectives for reading are approached and met in the classroom.

The curriculum materials used for reading and mathematics at Jamieson and Thirkell are the MacMillan Reading Series, Addison Wesley (mathematics), and the Houghton Mifflin Programs (for both reading and math), respectively.

The educational program design encompasses the use of the self-contained concept, where children spend the day in one room and the teacher instructs in all curriculum areas. This plan is used in one school from kindergarten to 4th grade and in the other school up to the Primary Unit only. One school is designed to have 3rd and 4th grade children involved in a platoon plan, where they move to various teachers depending on the curriculum area.

Evidence of Schools' Eligibility Criteria for This Program

1. The Jamieson and Thirkell schools are not scheduled to be closed within the next four-year period.

2. Both schools are in the top half of the district's Title I eligible schools (K - 6) listing with greatest criteria measured eligibility.

3. Each school had at least 50 percent of the 1980-81 kindergarten children with Head Start or similar preschool experiences.

4. All children in grades K - 4 will be involved in the project.

5. During the operational phase of the project, students in participating classes in each school will not receive compensatory services funded by other state or federally supported programs.

6. The schools will not use project funds for the development of new curriculum materials.